STANDARD EIGHT

1.0 NUMBERS

1.1 Specific Objectives

By the end of the topic, the learner should be able to:

a) read and write numbers in symbols and in words
b) work out squares of numbers and square roots of perfect squares
c) convert fractions to percentages and percentages to fractions
d) Convert decimals to percentages and percentages to decimals

1.2 Content

1.2.1 Place value and total value.
1.2.2 Reading and writing numbers in symbols and in words.
1.2.3 Squares and square roots.
1.2.4 Conversion of fractions to decimals and vice versa.
1.2.5 Conversion of fractions to percentages and vice versa.
1.2.6 Conversion of decimals to percentages and vice versa.

2.0 OPERATIONS ON NUMBERS

2.1 Specific Objectives

By the end of the topic, the learner should be able to:

a) work out problems involving operations on whole numbers
b) work out problems involving operations on fractions
c) work out problems involving operations on decimals
d) work out problems involving combined operations
e) work out problems involving percentage increase and decrease
f) work out problems involving number sequence.

2.2 Content

2.2.1 Operations involving whole numbers.
2.2.2 Operations involving fractions.
2.2.3 Operations involving decimals.
2.2.4 Combined operations.
2.2.5 Percentage increase and decrease.
2.2.6 Number sequence.

Note

i) Order of operations should involve only two operations at a time.
ii) Operations involving negative numbers should be avoided.

3.0 MEASUREMENT

3.1 Specific Objectives

By the end of the topic, the learner should be able to:

a) work out problems involving units of length
b) work out problems involving area and surface area
c) work out problems involving volume
d) work out problems involving units of capacity
e) convert units of capacity to units of volume and units of volume to units of capacity
f) work out problems involving mass
g) work out problems involving percentage profit and loss
h) work out problems involving bills
i) work out problems involving discount, percentage discount, commission and percentage commission

j) work out problems involving hire purchase
k) work out problems involving simple interest
l) work out problems involving compound interest using simple interest per unit time
m) work out problems involving postal charges
n) work out problems involving time, speed, distance and average speed
o) work out problems involving temperature in degree celcius.

3.2 Content

3.2.1 Working out problems involving conversion of units of length.
3.2.2 Working out problems involving perimeter and circumference.
3.2.3 Area of triangles, quadrilaterals circles, combined shapes and borders.
3.2.4 Surface area of cubes, cuboids and cylinders.
3.2.5 Volume of cubes, cuboids, cylinders and triangular prisms.
3.2.6 Capacity of cubes, cuboids and cylinders.
3.2.7 Conversion of units of capacity to units of volume and vice versa.
3.2.8 Working out problems involving conversion of units of mass.
3.2.9 Profit and loss.
3.2.10 percentage profit and loss.
3.2.11 Bills.
3.2.12 Commissions and percentage commissions.
3.2.13 Discount and percentage discount.
3.2.14 Hire purchase.
3.2.15 Simple interest.
3.2.16 Compound interest.
3.2.17 Postal charges.
3.2.18 Time, speed, distance and average speed.
3.2.19 Temperature in degrees celcius (°C).

4.0 GEOMETRY

4.1 Specific Objectives

By the end of the topic, the learner should be able to:

a) construct triangles
b) construct circles touching the three sides of a triangle
c) work out problems using Pythagorean relationship
d) construct parallelograms and rhombuses
e) work out problems involving properties of squares, rectangles, parallelograms, rhombuses and trapeziums
f) recognize and identify triangular and square based pyramids
g) identify and make nets of pyramids and prisms
h) make geometrical patterns.

4.2 Content

4.2.1 Constructing triangles.
4.2.2 Perpendicular from a point to a line.
4.2.3 Constructing circles.
4.2.4 Pythagorean relationships 3 - 4 – 5,5 - 12 - 13 and 7 - 24 - 25.
4.2.5 Constructing parallelograms and rhombuses.
4.2.6 Working out problems involving quadrilaterals.
4.2.7 Faces, edges and vertices of triangular and square based pyramids and prisms.
4.2.8 Nets of triangular and square based pyramids and prisms.
4.2.9 Curved patterns using straight lines.
4.2.10 Making patterns using quadrilaterals, triangles and circles.

5.0 ALGEBRA

5.1 Specific Objectives

By the end of the topic, the learner should be able to:

a) form and simplify algebraic expressions
b) work out the value of algebraic expressions using substitution
c) form and solve equations in one unknown
d) simplify inequalities in one unknown.

5.2 Content

5.2.1 Algebraic expressions.
5.2.2 Value of algebraic expressions.
5.2.3 Equations in one unknown.
5.2.4 Simplifying inequalities in one unknown.

6.0 TABLES AND GRAPHS

6.1 Specific Objectives

By the end of the topic, the learner should be able to:

a) draw graphs from given data
b) read and interpret tables and graphs
c) recognize and identify the median
d) work out problems involving mean, mode and median.

6.2 Content

6.2.1 Drawing tables and graphs.
6.2.2 Interpreting tables and graphs.
6.2.3 Median as middle value in a set of ordered data.
6.2.4 Working out problems involving mean, mode and median.

7.0 SCALE DRAWING

7.1 Specific Objectives

By the end of the topic the learner should be able to:

a) read and interpret diagrams drawn to scale
b) work out problems involving scale drawing.

7.2 Content

7.2.1 Reading and interpreting scale diagrams.
7.2.2 Making scale drawings.
7.2.3 Working out problems involving scale drawings.

8.0 RATIO AND PROPORTION

8.1 Specific Objectives

By the end of the topic, the learner should be able to:

a) work out problems involving ratio
b) work out problems involving simple direct and indirect proportions.

8.2 Content

8.2.1 Comparison using ratio.
8.2.2 Sharing using ratio.
8.2.3 Increasing and decreasing quantities using ratio.
8.2.4 Simple direct and indirect proportions.

ASSESSMENT

There is need to continually assess pupils' performance in order to find out whether the objectives of the course are being achieved. This assessment will also help the teacher in finding out which pupils need further guidance in some areas and thus organize remedial work for the weak pupils and extra work for the bright pupils. The three methods suggested below will be found useful for this type of assessment.

a) **Written Exercises**
In almost every mathematics lesson, pupils do written exercises. While marking these exercises, teachers should give credit for each correct step in the working in addition to the correct answer. Pupils should therefore be encouraged to show all the working and check on the accuracy of the answers by using reverse operation(s). It is important that pupils are taught how to organize their work logically. At the end of the topic/subtopic, teachers should give a diagnostic test. When assessing mastery of mathematical facts using written exercises, steps in the working may not be required.

b) **Oral Exercises**
These exercises are administered throughout the lesson. They involve giving responses orally.

c) **Observation**
When pupils are doing a practical activity such as measurement, construction, modelling and pattern making, the teacher should observe whether they are using the appropriate skills. When giving a mark for the finished work, the teacher should take into account how the pupil was performing the activity, whether the pupil understood the skills being learned and whether the finished product is what was expected.

Competencies to be tested
Teachers are advised to take into consideration the following aspects of learning when assessing the pupils work.

1. Knowledge of common mathematical concepts such as perpendicular, divisor, LCM.
2. Knowledge of specific mathematical facts.
3. Understanding of general mathematical principles.
4. Application of general mathematical principles.
5. Interpretation of information contained in charts, graphs and tables.

Note
The aspect(s) to be tested will depend on the content and the level of the learner.

EXAMINATION
At the end of the course, pupils will sit for the national examination - The Kenya Certificate of Primary Education (K.C.P.E). This examination tests whether the objectives of the syllabus, have been achieved.